

## **REMARKS**

### **A. Status of Claims**

Favorable reconsideration of this application, as presently amended, is respectfully requested. Claims 2, 5-6, 8, 10-19, 33, 35, 37, and 40 have previously been cancelled. Claim 24, is currently cancelled. Claims 1, 3-4, 7, 9, 20-32, 34, 36, 38-39, and 41 are currently pending

### **B. Procedural Matters**

Applicants acknowledge the statement at page 4 of the Final Office Action (hereafter "Final Action") that Applicants' prior arguments their prior March 29, 2011 Amendment (hereafter "Applicants' March 29, 2011 Amendment") with respect Claims 1, 3-4, 7, 9, 20-32, 36, 38-39, and 41 have been considered, but are now moot in view of a new grounds of rejection which is discussed below.

### **C. Amendments to the Claims**

Claim 1 has been amended to recite subjecting the peroxide treated softwood fibers to a refining treatment to form refined paper making fibers **which exhibit a substantially shorter fiber length and distribution and enhanced fiber collapsibility compared to the unrefined paper making fibers**, wherein said method reduces fiber suspension viscosity **after said refining treatment**. Support for these amendments to Claim 1 may be found, for example, in Claim 24 (now cancelled), as well as in paragraph [0011] of the above-captioned application.

Claim 34 has been similarly amended to recite subjecting the peroxide treated softwood fibers to a refining treatment to form fibers having a modified morphology **which exhibit a substantially shorter fiber length and distribution and enhanced fiber collapsibility compared to the unrefined fibers**, wherein said method reduces fiber suspension viscosity **after said refining treatment**. Support for these amendments to Claim 34 may also be found, for example, in paragraph [0011] of the published version (i.e., U.S. Pat. Appln. No. 20050061455) of the above-captioned application.<sup>1</sup>

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<sup>1</sup> All references to the above application herein will be with respect to the published version U.S. Pat. Appln. No. 20050061455, published March 24, 2005.

As was indicated in Applicants' March 29, 2011 Amendment, Claim 38 was to be amended to conform to the language of amended Claim 34 in reciting that the pH was between about 3 and 7. Nonetheless, Applicants have noticed that this amendment to Claim 38 was not indicated correctly (by underlining the number "3"). Accordingly, this particular amendment to Claim 38 has been repeated in the current Amendment After Final to clarify the language of amended Claim 38. Support for this amendment to Claim 38 may also be found, for example, in paragraphs [0013] and [0035] of the published version (i.e., U.S. Pat. Appln. No. 20050061455) of the above-captioned application.

**D. Response to Rejection of Claims 1, 3-4, 7, 9, 20-32, 34, 36, 38-39, and 41 under 35 U.S.C. § 102(b) as Being Unpatentable over Kubelka, in view of Westermarck**

At pages 2-4 of the Final Action, Claims 1, 3-4, 7, 9, 20-32, 34, 36, 38-39, and 41 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kubelka et al., "Delignification with Acidic Hydrogen Peroxide Activated by Molybdate (hereafter referred to as "**Kubelka**")", in view of PCT Appln. No. WO 03/042451 to Westermarck et al. (hereafter "**Westermarck**"). **This rejection is respectfully traversed with respect to Claims 1, 3-4, 7, 9, 20-23, 25-32, 34, 36, 38-39, and 41,**<sup>2</sup> as amended or as currently presented, for at least the following reasons.

In support of the rejection of Claims 1, 3-4, 7, 9, 20-23, 25-32, 34, 36, 38-39, and 41 under 35 U.S.C. § 103(a) as being unpatentable over **Kubelka**, in view of **Westermarck**, the Final Action makes the following allegations:

***Allegation 1:*** [**Kubelka**] teach[es] a process of treating softwood fibers by subjecting a softwood pulp to a solution containing peroxide and [ ] transition metal salts, Molybdate and Tungsten, at pHs between 2 to 5; peroxide concentration between 0.5-2% and transition metal level up to 1000 ppm, (0.1%). See table VII. Table II shows temperatures of 85°C and residence times of 2 hrs. the data in table II shows [a] decrease in viscosity by the treatment and table VIII shows that the pulps were refined, i.e., beaten. [**Kubelka**] also teach[es] the use of pre-bleached pulps and the same softwood fibers as claimed, see Table I for the pulps and Tables IV-V for the bleached Kraft pulps.<sup>3</sup>

***Allegation 2:*** [**Kubelka**] **does not teach the use of Fe<sup>+2</sup> or Fe<sup>+3</sup> ions for the activation of the peroxide.** However, [**Westermarck**] teach[es] **that ferrous**

<sup>2</sup> Claim 24 has been cancelled with the language recited therein being incorporated into amended Claim 1.

<sup>3</sup> See page 3 of the Final Action (emphasis added).

or ferric ions, in salts or complexes can be used to activate/catalyze peroxide to oxidize cellulosic fibers at acidic conditions, see page 2, lines 9-30; page 3, lines 16-31; page 4, lines 3-19. [Westermarck] also teach[es] that other[ ] metal ion[ ] catalysts could be used, e.g., copper, manganese, tungsten and molybdenum, but that **Fe<sup>+2</sup> or Fe<sup>+3</sup> ions were preferred**, see page 4, lines 13-19. Note that the last two metals, i.e., tungsten and molybdenum were the ones used by [Kubelka]. Therefore, **substituting the transition metal taught by [Kubelka] by Fe<sup>+2</sup> or Fe<sup>+3</sup> ions suggested by [Westermarck] would have been obvious** to one of ordinary skill in the art **since he/she would have [a] reasonable expectation of success if such metals were used**, since they have been used for the same purpose. “[W]here two equivalents are interchangeable for their desired function, substitution would have been obvious and thus, express suggestion of desirability of the substitution of one for the others is unnecessary.” In re Fout [,] 675 F.2d 297, 213 USPQ 532 (CCPA 1982), In re Siebentritt, 372 F.2d 566, 152 USPQ 618 (CCPA 1967). Also, it has been held that it is obvious to try, choosing from a finite number of identified, predictable solution with a reasonable expectation of success. See recent Board decision [in] *Ex parte Smith*, \_\_\_ USPQ2d \_\_\_, slip op. at 20 (Bd. Pat. App. & Interf. June 25, 2007)(Citing KSR, 82 USPQ2d at 1396).<sup>4</sup>

In response to what Allegations 1 and 2 assert, Claim 1 has been amended to recite subjecting peroxide treated **softwood** fibers<sup>5</sup> to a refining treatment step to form refined paper making fibers **which exhibit a substantially shorter fiber length and distribution and enhanced fiber collapsibility compared to the unrefined paper making fibers**, wherein said method reduces fiber suspension viscosity **after said refining**. Similarly, Claim 34 has been amended to recite subjecting the peroxide treated **softwood** fibers to a refining treatment to form fibers having a modified morphology **which exhibit a substantially shorter fiber length and distribution and enhanced fiber collapsibility compared to the unrefined fibers**, wherein said method reduces fiber suspension viscosity **after said refining treatment**.

What Allegations 1 and 2 assert no longer support the rejection of amended Claims 1 and 34 as being unpatentable over Kubelka, even in view of Westermarck. First, Kubelka only teaches delignification of kraft pulp with acidic (at pH 5) hydrogen peroxide activated by **tungstates** (e.g., sodium tungstate) and **molybdates** (e.g., sodium molybdate).<sup>6</sup> Nowhere does Kubelka teach or suggest using **ferrous (II) or ferric (III)** metal ions to activate peroxide according to amended Claims 1 and 34. In fact, Allegation 2 admits that Kubelka does not teach “the use of Fe<sup>+2</sup> or Fe<sup>+3</sup> ions for the activation of the peroxide” according to amended Claims 1 and 34. Instead, Allegation 2 relies upon Westermarck to allegedly “teach that ferrous or ferric ions, in salts or complexes can be used to activate/catalyze peroxide to oxidize cellulosic fibers at acidic conditions.”

<sup>4</sup> See pages 3-4 of the Final Action (emphasis added).

<sup>5</sup> i.e., **softwood** pulp fibers treated with a solution containing **ferrous (II) or ferric (III)** metal ions and peroxide to cause **peroxide oxidative degradation of cellulose** in those softwood fibers activated by **ferrous (II) or ferric (III)** metal ions)

<sup>6</sup> See page 1 of Kubelka.

Second, Allegation 2 provides no rational underpinning for the assertion that “substituting the transition metal taught by [Kubelka] by  $\text{Fe}^{+2}$  or  $\text{Fe}^{+3}$  ions suggested by [Westermarck] would have been obvious” that is factually taught by **Kubelka** or **Westermarck** with respect to the methods defined in amended Claims 1 and 34. Besides not teaching use of  $\text{Fe}^{+2}$  or  $\text{Fe}^{+3}$  to activate the peroxide, **Kubelka** also teaches that oxygen-delignified pulp pretreated with hydrogen peroxide gives pulp viscosity values less than 16 cp for all pulps tested, and that “at such low viscosities, one has to be concerned about pulp strength.” See page J112, right most column, under heading “Pulp Strength” of **Kubelka**. In other words, **Kubelka** suggests that lower (reduced) pulp viscosities are undesirable in its process, thus teaching away from the claimed process where reduced (lower) pulp suspension viscosities are achieved because of shorter length fibers after refining the peroxide treated pulp. See amended Claims 1 and 34 which recite that the method “reduces fiber suspension viscosity” after the refining treatment step, as well as reciting that the refined fibers “exhibit a substantially shorter fiber length and distribution and enhanced fiber collapsibility.”<sup>7</sup>

Third, the proposed modification of the **Kubelka** process according to what is allegedly taught by **Westermarck** would impermissibly “change the principle of operation” of the **Kubelka** process. “If the proposed modification or combination of prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious.”<sup>8</sup> The **Kubelka** process carries out peroxide bleaching of the pulp without intending to change the viscosity or length of the pulp fibers. In fact, replacing the molybdenum of the **Kubelka** process with ferrous (II) or ferric (III) iron according to **Westermarck** (and as proposed by Allegations 2) would cause Fenton reactions which would undesirably (per **Kubelka**) shorten the length of the fibers, and change viscosity the viscosity of the pulp suspension. Because **Kubelka** expresses (or at least suggests) a preference for not lowering (reducing) the viscosity of the peroxide bleached pulp suspension, the proposed modification by Allegation 2 of substituting ferrous (II) or ferric (III) iron according to **Westermarck** would “change the principle of operation” of the **Kubelka** process.

Fourth, because substituting ferrous (II) or ferric (III) iron according to **Westermarck** would “change the principle of operation” of the **Kubelka** process, the further assertion in Allegation 2 that such substitution would have been obvious “since [one of ordinary skill in the art] would have [a] reasonable expectation of success if such metals were used” is without any factual support in the references relied upon. If substitution of ferrous (II) or ferric (III) iron for molybdenum would change the “principle of operation” the **Kubelka** process, one of ordinary skill in the art could not have any “reasonable expectation of success” for such a substitution. Put differently, Allegation 2 cannot have it both ways by relying upon so much of **Westermarck** to modify the **Kubelka** process to support the rejection of amended Claims 1 and 34, but then ignoring those portions of **Kubelka** which would “teach away” from using ferrous (II) or ferric (III) iron according to **Westermarck** in place of molybdenum in the **Kubelka** process.

Fifth, nowhere does **Westermarck** teach refining its peroxide bleached fibers according to the method of amended Claims 1 or 34. In other words, because **Westermarck** does not teach refining its peroxide bleached fibers, the process of this reference cannot

<sup>7</sup> See also paragraph [0011] of U.S. Pat. Appl. No. 20050061455.

<sup>8</sup> See, e.g., *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959); MPEP § 2143.01(VI) (emphasis added).

achieve reduced (lower) pulp suspension viscosities, as well as shorter length fibers. As taught in the above-captioned application, reduced (lower) pulp suspension viscosities, well as shorter length fibers, are necessary for the treated softwood pulps to exhibit hardwood-like properties.<sup>9</sup>

Remaining Claims 4, 7, 9, 20-26, 28-32, 34, 36, and 38, as amended or as currently presented, depend directly or indirectly from either amended Claim 1 or amended Claim 34. Accordingly, Claims 4, 7, 9, 20-26, 28-32, 34, 36, and 38 are patentable over **Kubelka**, even in view of **Westermarck**, for at least the same reasons presented above in response to Allegations 1-1-2 for why amended Claims 1 and 34 are patentable over this combination of references.

For at least the foregoing reasons, Claims 1, 4, 7, 9, 20-26, 28-32, 34, 36, and 38, as amended or as currently presented, are patentable over **Kubelka**, even in view of **Westermarck**. Accordingly, the rejection of these Claims under 35 U.S.C. § 103(a) as being unpatentable over this combination references should now be withdrawn.

**E. Conclusion**

Claims 1, 3-4, 7, 9, 20-32, 34, 36, 38-39, and 41, as amended or as currently presented, are patentable over the art relied upon in the Final Action. Accordingly, Claims 1, 3-4, 7, 9, 20-32, 34, 36, 38-39, and 41 are in condition for allowance, and favorable action is earnestly solicited thereon.

Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Dr. Thomas W. Barnes at 513-248-6736 to expedite prosecution of the above application.

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<sup>9</sup> See, for example, paragraphs [0011] and [0030] of U.S. Pat. Appln. No. 20050061455.

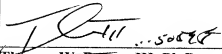
For at least the foregoing reasons, Claims 1, 4, 7, 9, 20-26, 28-32, 34, 36, and 38, as amended or as currently presented, are patentable over **Kubelka**, even in view of **Westermarck**. Accordingly, the rejection of these Claims under 35 U.S.C. § 103(a) as being unpatentable over this combination references should now be withdrawn.

**E. Conclusion**

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Please charge the amount of **\$0.00** required for the request for a three-month extension of time to our Deposit Account No. 09-0525. In the event any variance exists between the amount enclosed and the Patent Office charges for filing the above-noted documents, including any fees required under 37 C.F.R. 1.136 for any necessary Extension of Time to make the filing of the attached documents timely, please charge or credit the difference to our Deposit Account No. 09-0525. Further, if these papers are not considered timely filed, then a petition is hereby made under 37 C.F.R. 1.136 for the necessary extension of time.

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